

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
Amendment of Part 74 of the Commission's	)	MB Docket No. 18-119
Rules Regarding FM Translator Interference	)	

**COMMENTS OF BLUE RIDGE BROADCASTING CORPORATION**

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## EXECUTIVE SUMMARY

While Blue Ridge Broadcasting Corporation supports the effort to streamline the rules relating to interference caused by FM translators and expedite the translator complain resolution process, it submits these comments to voice its objections to and concerns regarding one of the proposals set forth in the Commission's *Notice of Proposed Rulemaking*. Specifically, Blue Ridge objects to the Commission's proposal to establish an outer contour limit of 54 dBu (using the FCC's standard prediction methodology) for full service stations affected by translator interference beyond which listener complaints would not be considered actionable.

Implementation of the Notice's "54 dBu" proposal would lead to significant audience erosion and revenue reduction for Blue Ridge's WMIT(FM) and numerous other full service stations, upsetting the "equitable balance" the Commission seeks to strike between translators and other broadcast stations. The proposal must be modified if it is to be workable.

Assuming the Commission ultimately adopts an outer signal contour limit, broadcasters must be given flexibility in how they may demonstrate that a translator is causing impermissible listener interference "inside" such limit. The FCC's F(50,50) methodology fails to properly account for the real-world impact of how terrain influences coverage, and it dramatically underestimates WMIT's actual coverage, as well as that of countless other stations. Broadcasters must be allowed to make alternative showings, e.g., using Longley-Rice methodology, when appropriate in order to more accurately reflect true coverage.

And, regardless of the methodologies broadcasters are permitted to use, the Commission's proposed limit of a station's 54 dBu contour is grossly inadequate. Many stations, including WMIT, have substantial audiences well beyond their 54 dBu contours. As such, drawing the "outer limit" line at 54 dBu would essentially authorize massive interference to

thousands of WMIT's listeners. Such an outcome would contravene the Commission's rules and precedent, as well as the Notice's stated goals.

Blue Ridge does not, however, object to the concept of establishing an outer signal limit "safe harbor" of sorts. But if such a limit is to be established, it must be done in a manner that adequately protects full service stations by finding a fair, appropriate limit and by allowing broadcasters flexibility in making showings of their coverage. Blue Ridge proposes that the Commission modify its rules such that no complaint of actual translator interference will be considered actionable if the alleged interference occurs outside the desired station's 48 dBu signal, as calculated using the Longley-Rice propagation methodology.

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To: The Commission

**COMMENTS OF BLUE RIDGE BROADCASTING CORPORATION**

Blue Ridge Broadcasting Corporation (“BRB”),<sup>1</sup> through counsel, hereby submits these comments in response to the *Notice of Proposed Rulemaking* (“Notice”) in the above-referenced docket, in which the Commission seeks comment on several proposals to streamline the rules relating to interference caused by FM translators and to expedite the translator complaint resolution process.<sup>2</sup>

**INTRODUCTION**

BRB applauds the Commission for acknowledging in this proceeding the need to “balance [its] enduring interest in maintaining the technical integrity of [the] FM services with

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<sup>1</sup> Blue Ridge Broadcasting is the licensee of two noncommercial educational stations—WMIT(FM), Black Mountain, North Carolina, Facility ID No. 5970 (“WMIT”), and WFGW(FM), Norris, Tennessee, Facility ID No. 76263 (“WFGW”) (WFGW and WMIT collectively, the “Stations”)—as well as two FM translators. Blue Ridge’s radio stations make up a regional NCE programming network, headquartered in Asheville, North Carolina. The Stations are located on opposite sides of the Blue Ridge Mountains, with WMIT on the eastern, North Carolina side, and WFGW on the western, Tennessee side of the mountain range. Both BRB Stations are listener-supported and offer similar, noncommercial programming. As ministries of the Billy Graham Evangelistic Association, the Stations feature positive, Christian music and educational and commentary programs focused on the teachings of the Bible.

<sup>2</sup> See *Amendment of Part 74 of the Commission’s Rules Regarding FM Translator Interference*, Notice of Proposed Rulemaking, MB Docket No. 18-119, FCC 18-60 (“Notice”) (rel. May 10, 2018).

[its] desire to promote greater certainty and stability for translator licensees.”<sup>3</sup> BRB believes certain proposals set forth in the Notice—such as requiring a minimum number of listener complaints (with standardized information) and allowing FM translators to resolve interference issues by moving to any available FM channel—may well achieve the balance the Commission seeks to strike.

But one of the Commission’s proposals fails to strike that balance, and adopting it in its current form would benefit a secondary service to the substantial detriment of full service stations. As such, BRB files these comments to state its objections to and serious concerns about the Commission’s proposal to establish an outer contour limit of 54 dBu (using the FCC’s standard prediction methodology) for full service stations affected by translator interference beyond which listener complaints would not be considered actionable.<sup>4</sup> Implementation of the “54 dBu” proposal would erode the audience of WMIT and numerous other full service stations (and, consequently, the monetary contributions to and/or advertising revenues generated by such stations would also decline), upsetting the “existing balance of equities”<sup>5</sup> between translators and other broadcast stations. BRB’s concerns with the Commission’s proposal are twofold.

First, BRB objects to the Commission’s “54 dBu contour limit” proposal to the extent that the analysis as to whether alleged interference originates within or beyond such contour limit would rely exclusively on the FCC’s standard contour prediction methodology—i.e., F(50,50)—as set forth in Section 73.313 of the Commission’s rules.<sup>6</sup> As discussed below, the FCC’s methodology, which is simplified by design, does not properly take into account the real-world

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<sup>3</sup> Notice ¶ 27.

<sup>4</sup> Notice ¶ 28.

<sup>5</sup> Notice ¶ 26.

<sup>6</sup> 47 C.F.R. § 73.313.

impact of how terrain influences coverage. As a result, the FCC's methodology dramatically underestimates WMIT's actual coverage, as well as that of countless other stations. Broadcasters must be allowed to make alternative showings (e.g., using Longley-Rice) when appropriate in order to more accurately reflect true coverage.

Second, no matter the methodology permitted, the Commission's proposed limit of a station's 54 dBu contour is grossly inadequate. Many stations, including WMIT, have significant audiences beyond their 54 dBu contours. To render any listener complaint of translator interference beyond that 54 dBu limit non-actionable would result in a radical decrease in listenership and, accordingly, in stations' ability to generate revenues (or, in BRB's case, to solicit donations) that are in turn used to air programming that serves the public interest.

BRB does not reject out of hand the idea that the Commission should establish an outer signal limit "safe harbor" of sorts. But if such a limit is to be established, it must be done in a manner that adequately protects full service stations, by finding a fair, appropriate limit and by allowing broadcasters flexibility in making showings of their coverage. As set forth below, BRB proposes that the Commission adopt a different limit: it should modify its rules such that no complaint of actual translator interference will be considered actionable if the alleged interference occurs outside the desired station's 48 dBu signal, as calculated using the Longley-Rice propagation methodology.

**I. The Outer Contour Limit Proposal Is Unworkable And Threatens To Degrade The Technical Integrity Of FM Services.**

The Notice repeatedly states the Commission's desire that any reforms to the translator interference complaint resolution process must be crafted such that the technical integrity of the

FM band is preserved.<sup>7</sup> The Commission even reminds prospective commenters that it has “consistently held that secondary services may not create any interference to a full service station.”<sup>8</sup> Yet its proposal that no complaint of actual interference would be considered actionable if such alleged interference occurs outside the desired station’s 54 dBu contour (as determined using the FCC’s F(50,50) methodology) would both degrade the integrity of the band and would expressly allow translators to interfere with full service stations. The Commission should not adopt the proposal in its current form.

**A. Broadcasters Must Be Given Flexibility To Use Longley-Rice When Making Coverage Showings.**

Assuming an outer signal contour limit is ultimately adopted, the Commission must allow broadcasters flexibility in how they may show that a translator is causing impermissible listener interference “inside” such limit. In other circumstances, the Commission permits alternative coverage showings to its F(50,50) propagation method.<sup>9</sup> It must likewise do so here to afford full service stations adequate protection against interference caused by secondary services, as the F(50,50) methodology does not always accurately capture a station’s signal strength.

The Commission’s F(50,50) coverage methodology was developed in a different era, literally (the 1940s) and technologically (long before the advent of computerized studies). Requiring its use as the sole methodology here, in order to simplify translator interference disputes, is fraught with problems. The F(50,50) methodology assumes that listeners reside

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<sup>7</sup> Notice ¶¶ 27-28.

<sup>8</sup> Notice ¶ 26 n.88 (internal citation omitted).

<sup>9</sup> *See, e.g.*, 47 C.F.R. § 73.313(f)-(j). Acknowledging that the standard F(50,50) methodology does not predict coverage well in all circumstances, the Commission has twice proposed “FM Point to Point” methods for deriving contours from a greater portion of the terrain, but such methods have not been implemented.



within an area described by contours, and it is based on Height Above Average Terrain (“HAAT”), calculated at only 3 to 16.1 kilometers from a transmitter site.<sup>10</sup> Admittedly, in some circumstances, the F(50,50) contour methodology offers a reasonable approximation of coverage. But that is hardly always the case. In fact, at the extremes of FM facility coverage, the F(50,50) methodology’s assumptions, which fail to adequately account for non-uniform terrain, produce wildly inaccurate results. Class C stations, for example, have coverage contour averages of 91.8 kilometers,<sup>11</sup> meaning the F(50,50) methodology, generally, uses only a small fraction of Class C stations’ terrain to predict coverage distances.

For WMIT, which is an over-height Class C station whose 60 dBu contour ranges from 71 to 99 kilometers, the Longley-Rice model provides a much more accurate coverage picture.<sup>12</sup> Figure 1 below demonstrates the difference between WMIT’s coverage as predicted by the Commission’s F(50,50) methodology versus Longley-Rice. The area shaded in blue shows all areas beyond the standard 60 dBu F(50,50) contour that are predicted, using Longley-Rice, to receive a 60 dBu signal. The 54 dBu F(50,50) and 48 dBu F(50,50) contours are also shown. (Figure 1 also displays the co-channel interference 40 dBu F(50,10) contour.) As Figure 1

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<sup>10</sup> The contour method was developed in the 1940s. The Commission added the terrain roughness factor to it in 1966. *See generally Development of VHF and UHF Propagation Curves for TV and FM Broadcasting*, Report R-6602 (rel. Sept. 7, 1966). But use of the correction with the curves was stayed indefinitely as of 1977. *See* 47 C.F.R. § 73.313, Note.

Thus, the Commission’s methodology was developed to predict reception and protection from interference when receivers used vacuum tubes, well before the invention of the transistor, and before the existence of computers and digital terrain databases.

<sup>11</sup> 47 C.F.R. § 73.210.

<sup>12</sup> WMIT’s transmitter site is located on Clingman’s Peak, adjacent to Mount Mitchell, the highest point in the United States east of the Rocky Mountains. Originally a super power station, it is an over-height, reduced-power full Class C FM Station with 36 kilowatts Effective Radiated Power. The Center of Radiation is 2,056 meters (6,745 feet) Above Mean Sea Level. Portions of the 60 dBu contour reach areas with elevations of 206 meters (676 feet) AMSL, and the 54 dBu contour reaches areas at 124 meters (407 feet) AMSL. The height differential is 1850 meters (6,070 feet) for the 60 dBu and 1932 meters (6,339 feet) for the 54 dBu.

shows, there are substantial areas beyond the 54 dBu F(50,50) contour where WMIT has greater than a 60 dBu signal, as calculated using Longley-Rice.

**FIGURE 1**

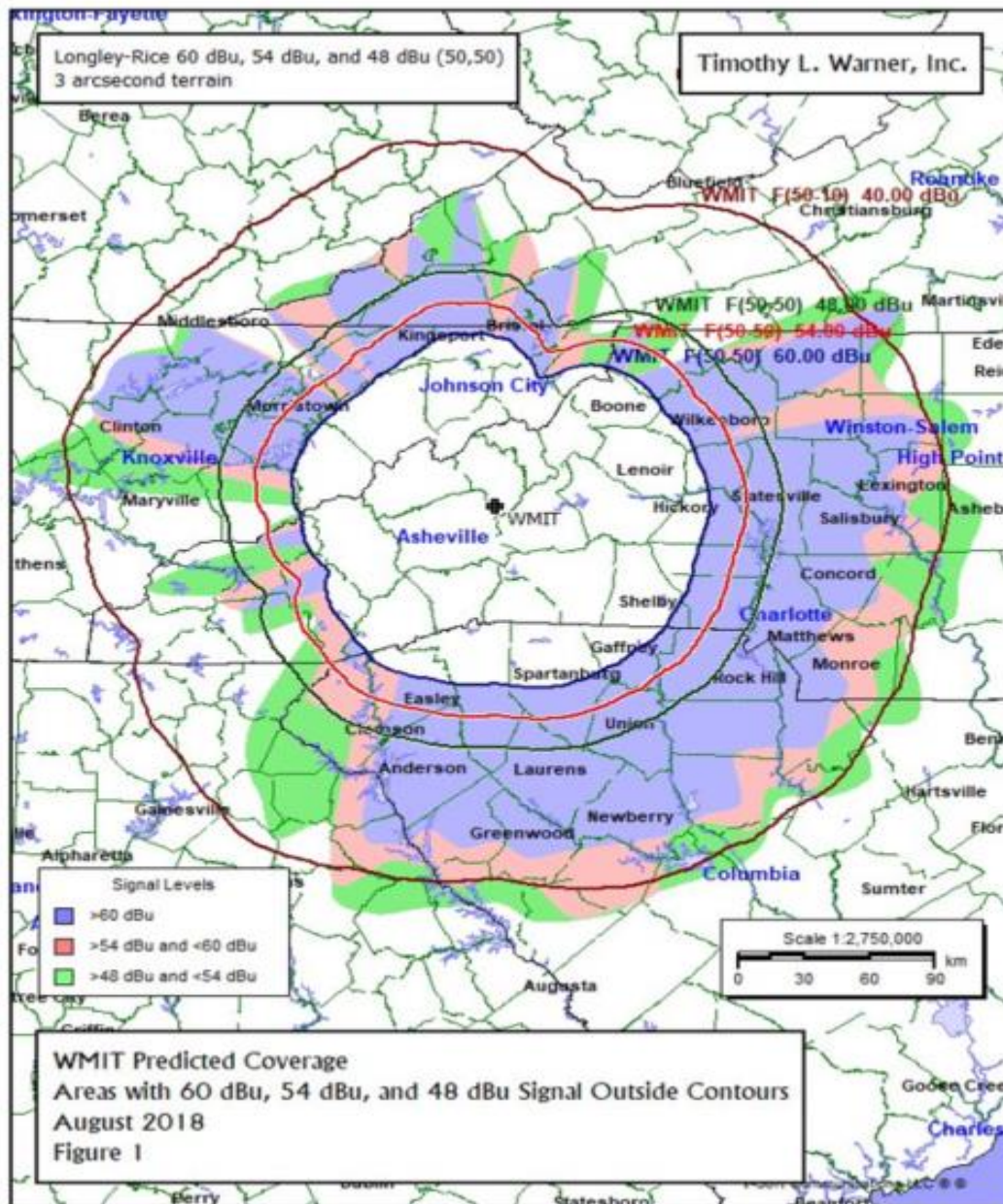


Figure 1 also shows areas, shaded in light red, where the signal calculated by Longley-Rice has less than 60 dBu but more than 54 dBu; and it shows areas, shaded in green, where the

signal is greater than 48 dBu but less than 54 dBu. In some directions, there are listeners with lower than a 48 dBu signal, but the 48 dBu signal level shows most active listening areas.

In addition to coverage maps, BRB's own data prove that WMIT has substantial listenership in the broader coverage area demonstrated using Longley-Rice. BRB's stations are listener-supported and feature noncommercial programming. As such, BRB relies very heavily on listener-contributions. Looking at data from the past three years, BRB analyzed the addresses of its listener-contributors. The data show that, whether using Longley-Rice to calculate signal strength or the FCC's F(50,50) methodology, thousands of WMIT's listener contributors live in areas (and receive WMIT's programming) beyond the 60 dBu and 54 dBu contours, illustrating why the Notice's proposed 54 dBu limit will not work, regardless of the methodology employed.<sup>13</sup>

In addition, the data also reveal the superior accuracy of the Longley-Rice's method in showing signal coverage—and why the Commission must allow stations to employ Longley-Rice if it creates any “outer limit” as proposed in the Notice. BRB analyzed where its listener-contributors live, by zip code. Using zip codes' reference points, BRB looked for zip codes in which listener-contributors live that are outside the Commission's 54 dBu F(50,50) contour, but where WMIT nevertheless has a signal level as calculated by Longley-Rice greater than 54 dBu.<sup>14</sup> In other words, BRB calculated the number of zip codes—and the number of listener-contributors living in them—that would fall outside of the Notice's proposed 54 dBu F(50,50) contour limit, but would be inside a 54 dBu limit using Longley-Rice.

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<sup>13</sup> See Section I.B., *infra*.

<sup>14</sup> See Declaration of Timothy Warner, attached as Exhibit 1.

BRB's data shows that there are approximately 261 zip codes whose reference points fall outside of the Commission's 54 dBu F(50,50) contour for WMIT but *within* WMIT's Longley-Rice 54 dBu signal level. And, BRB's analysis shows that more than 3,750 listener-contributors live in those zip codes. BRB conducted an identical analysis using 48 dBu. BRB's data show that there are approximately 282 zip codes whose reference points fall outside the Commission's 48 dBu F(50,50) contour for WMIT but *within* WMIT's Longley-Rice 48 dBu signal level. More than 2,160 listener-contributors live in those zip codes. Those whopping listener-contributor figures, of course, do not even take into account all of the WMIT listeners in such zip codes who are not contributors to BRB.

The foregoing figures are consistent with what BRB has seen over the years: WMIT, historically, has had significant listenership in numerous areas and cities beyond the 54 dBu F(50,50) contour. Again, the data illustrate that, in WMIT's case, Longley-Rice provides a far more accurate representation of signal strength than does F(50,50). Table 1 below shows WMIT's signal strength to several cities beyond the 54 dBu contour. Using those cities' National Atlas coordinates and the distance and bearing to those coordinates, Table 1 shows WMIT's signal strength calculated (1) using Longley-Rice, (2) using the  $\Delta h$  terrain roughness factor of Section 73.313 along with HAAT as calculated from 10 kilometers to 50 kilometers (the  $\Delta h$  distance), and (3) using the standard HAAT from 3 to 16 kilometers along with the signal strength using standard HAAT and FCC curves. As shown below, WMIT's signal strength calculated using Longley-Rice is far greater for all the cities than as calculated by the standard FCC contour methodology—by between 21 and 29.9 dBu for the selected locations.

**TABLE 1**

Community Coordinates	Distance Bearing	Longley-Rice Signal Strength	$\Delta h$ HAAT (10-50km)	Signal Level Standard HAAT
Charlotte, NC 35-13-37 N 80-50-36 W	142.5 km 112.9°	72.2 dBuV/m	348.27m 1,556.0 m	43.6 dBu 1,109.2 m
Winston-Salem, NC 36-05-59 N 80-14-40 W	188.7 km 77.0 °	56.6 dBuV/m	561.09m 1,478.2 m	31.6 dBu 1,084.6 m
Salisbury, NC 35-40-15 N 80-28-28 W	164.1 km 92.0°	67.7 dBuV/m	279.81m 1,629.3 m	37.8 dBu 1,148.8 m
Rock Hill, SC 34-55-29 N 81-01-31 W	145.7 km 127.7°	73.4 dBuV/m	217.7m 1,624.9 m	43.6 dBu 1,244.0 m
Anderson, SC 34-30-12 N 82-39-01 W	140.6 km 193.8°	64.6 dBuV/m	396.85m 1,236.6 m	43.6 dBu 1,038.8 m

Thus, should the Commission set a signal limit beyond which translator interference complaints will not be actionable, broadcasters seeking to demonstrate translator interference must be allowed to use the Longley-Rice methodology to show signal strength. Clearly, reliance solely upon the Commission's methodology would, in the case of WMIT and other stations, wrongly exclude thousands of listeners that the Longley-Rice model properly takes into account. The Commission cannot at the same time protect the integrity of the FM band while ignoring translator interference to actual listeners who receive full service station signals well beyond the areas predicted by the FCC's propagation methodology.

**B. The Proposed 54 dBu Limit Disregards Substantial Actual Interference And Fails To Safeguard The Technical Integrity Of The FM Band.**

The foregoing discussion reveals why the Commission must allow the use of the Longley-Rice propagation method to show signal strength should it decide to draw a line establishing an outer limit beyond which listener interference complaints are deemed non-

actionable. For WMIT and numerous other stations, the F(50,50) methodology is simply unworkable.

But regardless which methodology is used to show signal strength for this purpose, as stated above, WMIT has substantial coverage outside of the 54 dBu contour; as such, drawing the “outer limit” line there would, effectively, authorize massive interference to thousands of WMIT’s listeners. Such an outcome would contravene the Commission’s rules and precedent, as well as the Notice’s stated goals.

A recent example involving WMIT shows just how destructive a 54 dBu contour limit would be. In 2016, a broadcaster filed an application to modify an unbuilt construction permit to a location in Charlotte, North Carolina, as a fill-in translator—W295CD—for station WTCG(AM), Mount Holly, North Carolina, during the window allowing translator moves of up to 250 miles for AM fill-in operation.<sup>15</sup> The applicant specified channel 295, co-channel to WMIT, and received a construction permit.

BRB reviewed the proposed facilities and quickly determined that WMIT has significant listenership, including a significant number of contributors, in the area that included the proposed W295CD 60 dBu contour. Figure 2 shows WMIT’s signal strength, predicted using the Longley-Rice propagation model, in that area: WMIT has a signal strength of greater than 54 dBu in the majority of the area within the proposed W295CD 60 dBu contour.<sup>16</sup>

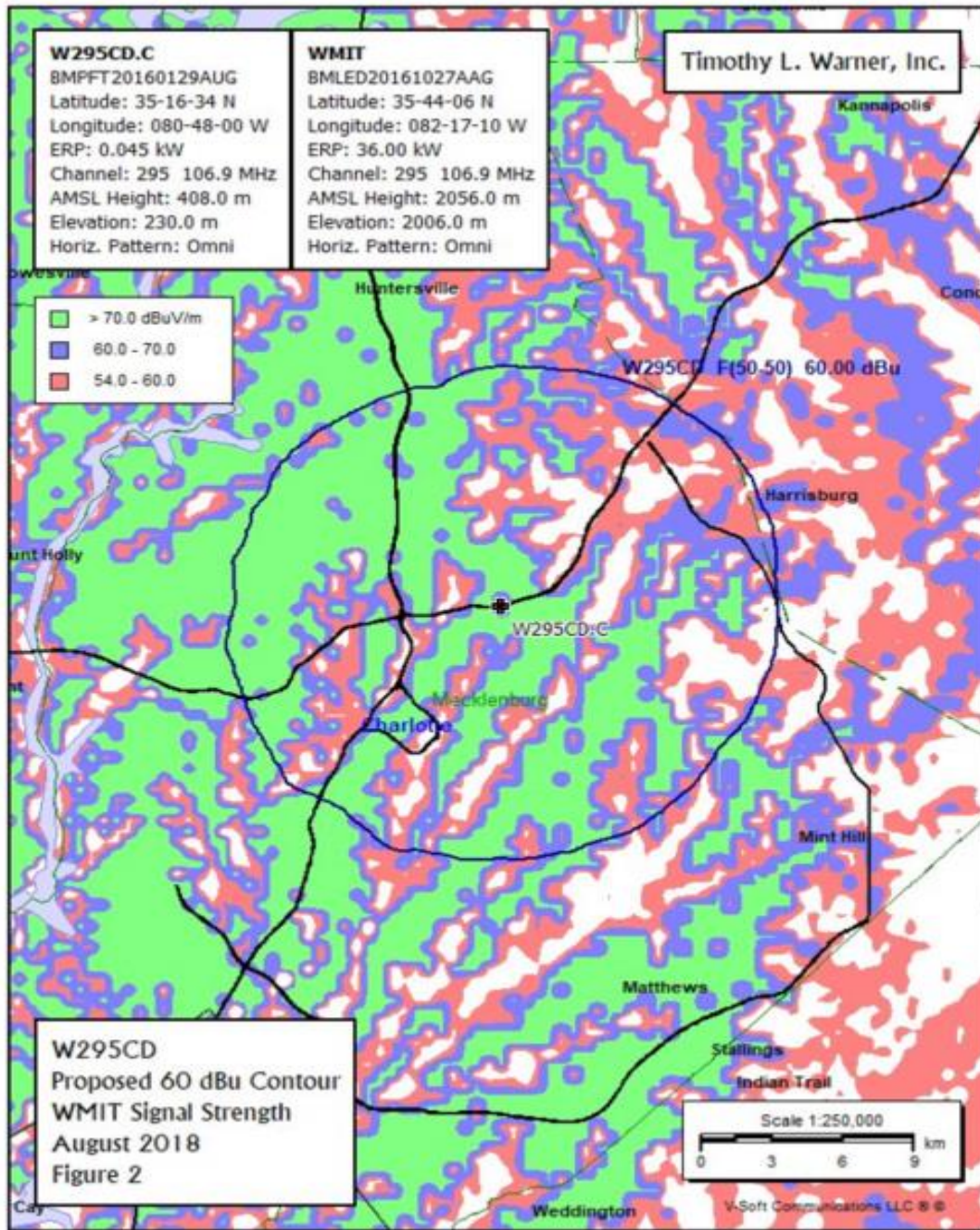
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<sup>15</sup> See FCC File No. BNPFT- 20160129AUG.

<sup>16</sup> See Figure 1, *supra*.

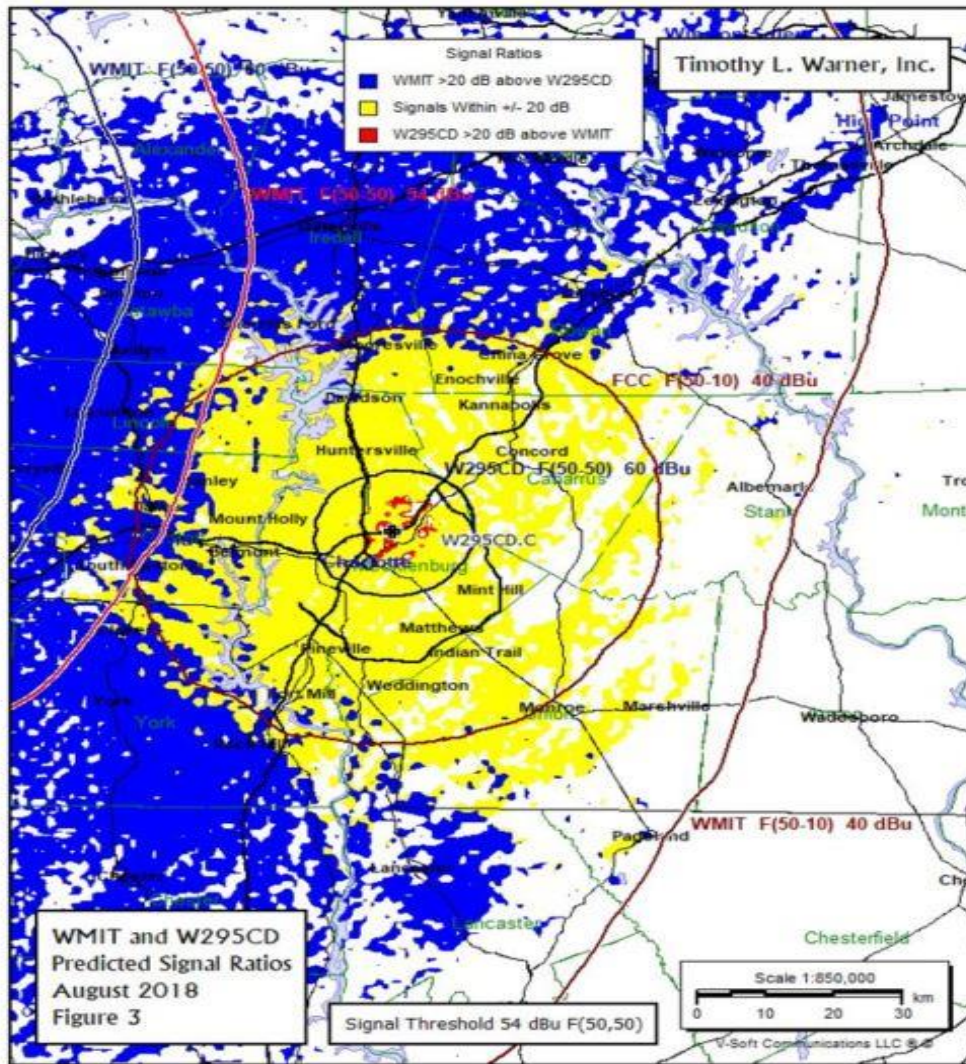


FIGURE 2



Thus, massive, co-channel interference to WMIT would occur in the event that W295CD is built out—interference that would effectively be ignored if the Commission adopted the Notice’s “outer limit” proposal. Figure 3 uses the proposed W295CD facilities as the station of interest, and calculates the Desired to Undesired signal ratios with respect to WMIT.

FIGURE 3



The areas shaded in blue in Figure 3 receive an WMIT signal that is greater than 54 dBu signal and would also be at least 20 dB stronger than the W295CD signal (20 dB is the established ratio for co-channel interference).<sup>17</sup> To give an idea of the scope of potential interference that W295CD would cause, consider the following: in Mecklenburg County (NC) alone, using

<sup>17</sup> The areas shaded in yellow in Figure 3 receive neither stations' signal with the required 20 dB margin, resulting in reception for neither facility. The areas shaded in red would receive the W295CD signal with at least 20 dB greater signal strength than that of WMIT.



Longley-Rice, WMIT would have a signal of at least 54 dBu that reaches 848,257 people. Of those people, 99.5% of them—844,381—are predicted to receive interference from W295CD. All of those people, however, are located *outside* WMIT’s 54 dBu F(50,50) contour—meaning interference complaints from any of them would be dismissed as non-actionable under the proposal set forth in the Notice. It is self-evident that an “outer limit” of 54 dBu, whether calculated with the Commission’s methodology or Longley-Rice, would improperly elevate translators over full service stations—an entirely inequitable result that fails to come close to the “balance” the Commission seeks to maintain.

## **II. The Commission Should Adopt An “Outer Limit” Of 48 dBu, Calculated Using Longley-Rice Methodology.**

BRB proposes that the Commission adopt a different contour limit to achieve its “goal of safeguarding the technical integrity of the FM band.”<sup>18</sup> BRB proposes that the Commission establish an outer contour limit for a full service station affected by a translator of 48 dBu, calculated using Longley-Rice methodology, and that any listener complaints beyond that limit would be considered non-actionable. BRB believes that such a limit would adequately protect WMIT and other similarly situated stations, while at the same time promoting greater certainty and stability for translator licensees.<sup>19</sup>

## **CONCLUSION**

For the foregoing reasons, Blue Ridge Broadcasting Corporation urges the Commission to reject the 54 dBu contour F(50,50) outer limit proposed in the Notice, and, instead, to modify its rules to state that no complaint of actual interference will be considered actionable if the

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<sup>18</sup> Notice ¶ 28.

<sup>19</sup> Notice ¶ 27.

alleged interference occurs outside the desired station's 48 dBu signal, as calculated using the Longley-Rice methodology.

Respectfully submitted,

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August 6, 2018

**EXHIBIT 1**

**Declaration of Timothy L. Warner**

## **Declaration Technical Methods**

I declare, under penalty of perjury, that I am a technical consultant to broadcasting and other communications systems, that I have over twenty-five years of experience in the engineering of broadcast and other communications systems, that I am familiar with the Federal Communications Commission's Rules found in the Code of Federal Regulations Title 47, that I am a Professional Engineer registered in North Carolina, that I have prepared or supervised the preparation of the technical showings for comments of Blue Ridge Broadcasting Corporation, and that all of the facts therein, except for facts of which the Federal Communications Commission may take official notice, are true to the best of my knowledge and belief.

The maps prepared for the comments were generated using Probe 4, a propagation and mapping program from V-Soft Communications. Terrain data is extracted from the National Elevation Dataset 03 arcsecond database. For contours, calculations are at one degree horizontal increments. For full area coverage a one kilometer grid spacing is used. For showings related to W295CD, Charlotte, North Carolina, a 0.5 kilometer spacing is used.

Area coverage is calculated using the Longley-Rice v1.2.2 propagation model. Settings are those used for VHF studies for FM and Television coverage. Situation and Time Variability are set to 50%.

Zip codes are selected using the reference points for each zip code. Zip codes whose reference point is beyond the 60 dBu F(50,50) contour, or the 54 dBu F(50,50) contour, and whose predicted signal at the reference point is greater than 60 dBu are then selected. Donor information for those zip codes is tabulated. The same process is followed for 54 dBu signals and 48 dBu signals.

In addition, community reference points for selected communities are taken from the Census Bureau. The signal calculated using Longley-Rice is compared to the standard FCC Curve calculations. In addition, terrain from 10 kilometers to 50 kilometers is used to calculate  $\Delta h$ , which in all cases exceeds the value of 50 assumed for propagation curves.



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2 August 2018